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(54) Avoidance of spurious emissions from xDSL transmission

(57) To avoid spurious energy radiation from a wire-line communication resource (42-44) supporting data over voice, such as in xDSL, modems (40, 46) supporting a multi-carrier transmission scheme undertake a line balance assessment (136-138) for each sub-channel carrier within the system. Specifically, an addressed modem (40) measures, for example, the signal to noise ratio of a differential transmission mode and a common transmission mode to provide the balance assessment (138). More particularly, a receive chain in the addressed modem is selectively switched (84) to receive

the differential mode as appearing across the terminals of an isolation transformer (66) or the common mode (as seen with respect to ground) from a centre tap (88) in a line-side winding (70) of the isolation transformer (66). Any sub-channel carrier that fails to provide a pre-determined level of balance (140) is de-selected (141) by the modem and not used for traffic. Generally, the modems (40, 46) at both ends of the wireline connection (42-44) notify one another of selected sub-channels, while the concept can be employed in a dynamic in-call fashion (152, 158-160).

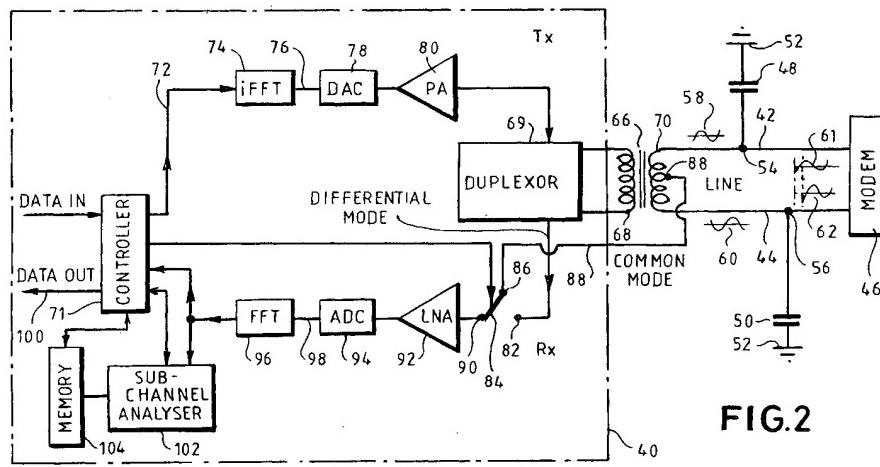


FIG.2



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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)		
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim			
A	SJOEBERG ET AL: "Digital RFI suppression in DMT-based VDSL systems" IEEE INTERNATIONAL CONFERENCE ON TELECOMMUNICATIONS, 21 - 25 June 1998, pages 189-193, XP001014258 New York, US * page 189, right-hand column, paragraph 5 *	1,15,29	H04L27/26		
A	---	1,15,29			
A	US 5 778 048 A (GEUN-HO KIM) 7 July 1998 (1998-07-07) * abstract *	1,15,29			
A	---	1,15,29			
T	WO 97 40608 A (AMATI COMMUNICATIONS) 30 October 1997 (1997-10-30) * page 9, line 11 - line 16 *	1,15,29			
T	---	1,15,29			
T	STOLLE R: "ELECTROMAGNETIC COUPLING OF TWISTED PAIR CABLES" IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS, vol. 20, no. 5, June 2002 (2002-06), pages 883-892, XP001143155 -----	1,15,29	TECHNICAL FIELDS SEARCHED (Int.Cl.7)		
			H04L H04B		
The present search report has been drawn up for all claims					
Place of search	Date of completion of the search	Examiner			
THE HAGUE	5 June 2003	Scriven, P			
CATEGORY OF CITED DOCUMENTS					
X : particularly relevant if taken alone	T : theory or principle underlying the invention				
Y : particularly relevant if combined with another document of the same category	E : earlier patent document, but published on, or after the filing date				
A : technological background	D : document cited in the application				
O : non-written disclosure	L : document cited for other reasons				
P : intermediate document	& : member of the same patent family, corresponding document				

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 30 6633

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
 The members are as contained in the European Patent Office EDP file on
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05-06-2003

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 5778048	A	07-07-1998	KR CN RU	143113 B1 1148305 A ,B 2118048 C1	01-08-1998 23-04-1997 20-08-1998

WO 9740608	A	30-10-1997	US AU AU AU AU CA CA CN DE DE DE EP EP JP JP KR KR WO WO US US US US US US AU EP JP KR WO US	6014412 A 727612 B2 2461897 A 727491 B2 3054797 A 2251887 A1 2251946 A1 1229553 A 69714241 D1 69714241 T2 69720436 D1 0894364 A1 0894390 A1 2000509577 T 2001527704 T 2000010536 A 2000010537 A 9740587 A1 9740608 A1 6456673 B1 5995567 A 2001026602 A1 2001028692 A1 2675397 A 0894389 A1 2000509578 T 2000010535 A 9740609 A1 6035000 A	11-01-2000 14-12-2000 12-11-1997 14-12-2000 12-11-1997 30-10-1997 30-10-1997 22-09-1999 29-08-2002 20-02-2003 08-05-2003 03-02-1999 03-02-1999 25-07-2000 25-12-2001 15-02-2000 15-02-2000 30-10-1997 30-10-1997 24-09-2002 30-11-1999 04-10-2001 11-10-2001 12-11-1997 03-02-1999 25-07-2000 15-02-2000 30-10-1997 07-03-2000
